

Community Education of Community Waters: Salmon in Lynden

Part 3 of a 4-part series on water,
as it pertains to the Lynden community

The Salmon of Our Community

Located amidst Fishtrap Creek, the Nooksack River, and several large ditches, the City of Lynden finds itself in the privileged position of being home to not only humans, but also to a variety of salmon species.

In Fishtrap Creek, Chinook, Chum, and Coho salmon are currently (as opposed to historically) known to be present. In Whatcom County, the number of currently present native species increases to include all five Pacific salmon species (Chinook, Chum, Coho, Sockeye, & Pink; see article on pg. 3) and such salmonids as Steelhead, Coastal Cutthroat Trout, Rainbow Trout, Bull Trout/Dolly Varden, and Kokanee. As well, two non-native salmonid species now call Whatcom County their home: Eastern Brook Trout and Brown Trout.

Interested in learning more about salmonid species distribution in Lynden or in Whatcom County? Go to <http://whatcomsalmon.wsu.edu/>



Winter 2005

Volume 1, Issue 3:
Salmon

Salmon vs. Salmonid

In reading or hearing about salmon, you may have come across the unfamiliar term *salmonid*.

The term *salmonid* is often used in reference to a group of fish that includes salmon and other fish with genetic traits that are similar to salmon, including trout and char.

Local Salmon Populations Endangered

Historically, salmon existed in Whatcom County in abundance. "Old timers" tell tales of the creeks and river nearly overflowing with fish. However, in recent years, this icon of the Pacific Northwest has started to face some serious scarcity issues. So much so, in fact, that a few native salmon populations are considered to be heading towards extinction.

In 1999 two species of salmonids that inhabit Whatcom County were listed as *threatened* on the federal Endangered Species Act: Chinook Salmon and Bull Trout. As well, Coho are currently a *candidate species* for listing under the Endangered Species Act (see pg. 2 for definitions).

A variety of factors may be responsible for the significant population declines that have been witnessed in these species. Some potential factors include: shifts in climatic conditions, shifts in oceanic and riverine conditions, and

human activities. Human activities, such as introduction of non-native (competing) species, reduction in streamside vegetation and other fish habitat, and pesticide and herbicide use have contributed to increased stream temperatures, decreased surface water oxygen levels, and other water quality issues that directly affect salmon. As well, events like overfishing, blocked fish passageways, too high and too low instream flows, and poor land use management can have detrimental effects on fish populations.



What You Can Do To Help


As the human population in the Nooksack watershed is projected to increase by 38% between 2000 and 2020 (source: Whatcom County), the potential for human impacts upon salmon will only increase. (Continued on pg. 2)

Local Salmon Populations Endangered, cont. from pg. 1

There are several things that you can do to minimize your impact upon local salmon, including:

- ◆ Minimize your use of pesticides, herbicides, and fertilizers. Though you may not live next to a waterway, stormwater runoff can deliver these products to local waters.
- ◆ Keep you and your pets out of surface waterways during migration, holding, and spawning periods (see pg. 3 for timing information). Disturbances can harm already-layed eggs, destroy habitat and suitable spawning sites, and scare spawning salmonids away.
- ◆ Maintain stream-side trees and shrub buffers. If your property abuts a waterway, maintain trees, bushes, and other shade-providing vegetation near the water's edge. This will provide protection from predators, as well as help to maintain

healthy oxygen and temperature levels for salmonids.

- ◆ Never dump anything down a stormdrain or into a local waterway. Salmon need clean water to survive and reproduce. Most stormdrains in Lynden drain directly to local waterways (the Nooksack River, Fishtrap Creek); dumping manure, motor oil, or paint down a stormdrain is like dumping these pollutants directly into the waterway.
- ◆ If your car (trailer, boat, etc.) is leaking fluids, get it repaired as quickly as possible. These pollutants often make their way into local waterways, either directly or via stormdrains.
- ◆ Wash your car at a commercial car wash that treats and/or recycles its wastewater, or wash your car on your lawn or other permeable surface using a mild dish-washing soap. 

Candidate species is any plant or animal species for which the U.S. Fish & Wildlife Service (FWS) or National Oceanic and Atmospheric Administration (NOAA) Fisheries has on file sufficient information on biological vulnerability and threats to support a proposal to list as endangered or threatened.

Threatened is defined as any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Endangered means any species which is in danger of extinction throughout all or a significant portion of its range other than a species of the Class Insecta determined by the Secretary to constitute a pest whose protection under the provisions of this Act would present an overwhelming and overriding risk to man.

—Federal Endangered Species Act

For more information about endangered species or the federal Endangered Species Act, go to <http://endangered.fws.gov/>

A Shared Strategy to Recovery

In response to Pacific Northwest salmon listings on the federal Endangered Species Act (ESA), the 1998-99 State Legislature passed RCW 77.85, the Salmon Recovery Act. This act assumes responsibility to manage natural resources at the state level, rather than relinquishing these responsibilities to federal agencies. Further, the act provides for watershed-level recovery planning. With the belief that the recovery of local salmon populations is best undertaken by those agencies, governments, groups, and citizens that are most knowledgeable of the salmon, their local habitat issues, and unique population-limiting causes, the Legislature empowered regional groups to develop their own recovery strategies.

As set forth by the Legislature and Governor, recovery efforts call for both immediate habitat, harvest, and hatchery improvements, and for "regional consensus on measurable actions to recover salmon that will result in recovering naturally spawning salmon to harvest-

able levels and achieving" the de-listing of salmon from the ESA (Shared Strategy's "Salmon Recovery in Washington State"). To provide for the former, the Legislature created the Salmon Recovery Funding Board (SRFB), which provides



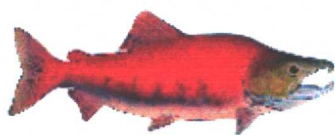
funding for projects to protect and restore habitat, as well as fiscal oversight for recovery work in the state.

In the Nooksack Basin, the City of Lynden, along with the cities of Blaine,

Everson, Nooksack, Sumas, and Bellingham, Whatcom County, Whatcom County PUD No. 1, Lummi Nation, Nooksack Tribe, state and federal agencies, and non-profit organizations, have come together and are working on a recovery strategy for Nooksack Basin salmonids. Once completed, our local strategy will become one component of the Puget Sound Recovery Plan, which will then become the official ESA recovery plan for Puget Sound listed salmonids. Drafting of our local recovery plan is underway with the goal of a spring (2005) completion date.

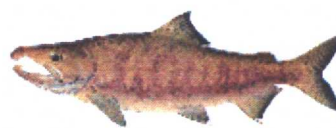
For more information on how Puget Sound communities—including ours—are working to improve salmon populations and de-list Pacific Northwest salmonids from the federal Endangered Species Act, go to www.sharedsalmonstrategy.org/ For more information on the SRFB, visit www.iac.wa.gov/srfb/default.asp

Salmon Descriptions



SOCKEYE SALMON

Sockeye are most notable for their unique coloring. Dark blue while they're in the ocean, this salmon's coloring changes to bright red along the body and green on the head once the fish return to fresh water (after spending 1-2 years in the ocean). Nooksack sockeye are a distinct population that spawn in the upper reaches of both the North and South Forks of the Nooksack River and then rear in the river for up to two years before migrating out to sea. Sockeye migrate into the Nooksack beginning in April and spawn from August to November.



CHUM SALMON

Chum—or “dog” salmon, so named due to spawning males’ large canine teeth—develop red vertical (male) or horizontal (female) lines during spawning. Chum are the second largest Pacific salmon, weighing as much as 40 pounds. These fish are the most abundant species of Pacific salmon in Washington. However, since they are not strong jumpers, these fish are generally only found in the lower reaches of the Nooksack. Migration occurs between August and December and spawning occurs between October and February.



PINK SALMON

Pink salmon, also referred to as “humpback” salmon, are easily recognized by the humped back males develop during spawning. Pinks are smaller in size, averaging 2-5 pounds. These salmon spend a fixed 18-month period at sea, returning as 2-year olds in odd-numbered years (2005, 2007, etc.) to spawn in the basin. Pinks begin migrating in the Nooksack Basin beginning in July and spawn from August through October.



COHO SALMON

Coho, or “silver,” salmon are bright silver in color during their time at sea. During periods of spawning both males and females develop green backs and red sides. Noticeable are their white or grayish “lips” (gums). These salmon migrate into the Nooksack basin beginning in July and spawn between October and January. Coho salmon in the Nooksack Basin are a *candidate species* for listing under the federal Endangered Species Act.



CHINOOK SALMON

Chinook, or “King,” salmon are recognized for their black-spotted back, and dorsal and tail fins, and black “lips” (gums). This salmon is the largest of all Pacific salmon, averaging 18-24 pounds, with some growing larger than 100 pounds. The Nooksack Basin is home to two genetically distinct populations of native Chinook, one, which spawns in the North Fork (and thus referred to as “North Fork Chinook”), and the other, which spawns in the South Fork (thus known as “South Fork Chinook”). Both migrate into the basin beginning in March and spawn from August to October. A third run of Chinook, comprised primarily of non-native Chinook, spawns from September to November. Native Chinook are listed as *threatened* under the federal Endangered Species Act.

What is an *anadromous* fish?

The term “anadromous” refers to a type of fish that spends distinct portions of its life in both salt- and fresh-waters, such as Pacific salmon. In most instances, the eggs of anadromous fish are laid along river or lake beds. Once the eggs hatch, the juvenile fish spend varying (population- and species-dependent) lengths of time in freshwater before migrating out to sea. The fish then spend a varying (population- and species-dependent) period of time in the ocean while they mature, before returning to the freshwater system to spawn and, subsequently, die.

Graphics provided by NOAA Fisheries. Information from Whatcom Salmon Recovery (Whatcom Co.) and U.S. Fish & Wildlife Service.

The City of Lynden Public Works Department produced this newsletter with funding from the Public Involvement and Education Fund, financed by proceeds from Washington State Water Quality Account, and administered by the Puget Sound Action Team.



Questions???

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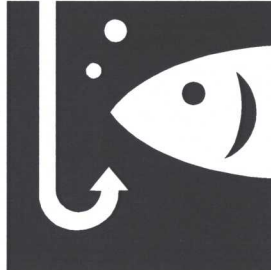
Fishing for Chinook?



Even though Chinook salmon are listed as a *threatened species* under the federal Endangered Species Act, during certain times of the year and in certain parts of the Nook-

sack River, licensed fishers are allowed to catch up to two Chinook if they subsequently release the fish unharmed.

If you would like more information on the dates and sites for Chinook fishing, call the Washington Department of Fish & Wildlife (WDFW) Fishing Hotline at (360) 902-2500.



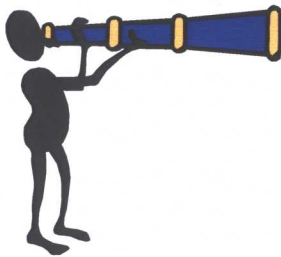
Volunteer Opportunities

Are you interested in volunteering your time or resources to benefit local salmon? There are several opportunities available. Consider contacting the following groups:



- Nooksack Salmon Enhancement Association (NSEA) at 715-0283 ext. 112
- Whatcom County Conservation District Stream Team at 354-2035

Interested in making your stream-, river-, or ditch-side property more salmon friendly? Contact Kasey in Public Works at 354-3446.



Where to Watch for Salmon

There are a variety of places, both in Lynden, and in the County, to

- at Front St.
- The Fishtrap Creek footbridge at Kok Rd.
- From the Jim Kaemingk, Sr. footbridge west of Cedar Dr.

of Gla-

cier:
Coho in
October-January, Pinks and Chinook in August and September of odd years, Steelhead and sea-run Cutthroat trout in May and June



watch salmon as they migrate upstream, hold, and spawn. Since the Nooksack basin is home to all five Pacific salmon species and several other salmonid species, there are a variety of times throughout the year to view the fish. Some of the optimum sites include:

In Lynden:

Watch Coho, Chum, and Chinook in October-December at:

- The Fishtrap Creek footbridges in Bender Field Park
- The Fishtrap Creek footbridge in Lynden Park
- The footbridge across Fishtrap Creek south of Main and 8th Sts.
- The Fishtrap Creek footbridge

In other parts of Whatcom County:

- View Whatcom Creek from the Maritime Heritage Park and the Whatcom Creek Trail: Pinks in August-September of odd years (2005, 2007, etc.) and Chinook, Chum, and Coho in October-December
- View Thompson Creek from Glacier Creek Road, a mile past the bridge: Coho in October through January, Pinks in September of odd years, Steelhead and sea-run Cutthroat trout in May and June
- View Boyd Creek, three miles down Deadhorse Creek Road, off of Mt. Baker Highway, ~1 mile east

(Information on County locations provided by Whatcom Salmon Recovery, Whatcom County.)



The Polite Way to Stare

When viewing salmon, the adage "look, but don't touch" is very appropriate. Please remember to be quiet, to avoid throwing objects at the fish or water, to avoid disturbing the water in any way, to keep pets on leashes, to watch for other pedestrian and vehicular traffic, and to stay on the trails and off of private property and creek edges. Happy viewing!

Community Education of Community Waters: Water Quantity in Lynden

Part 1 of a 4-part series on water,
as it pertains to the Lynden community

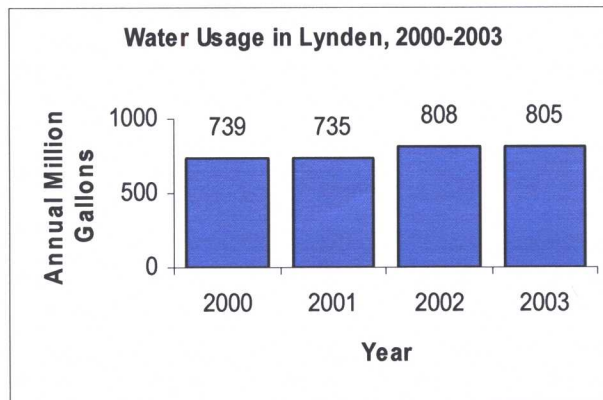
How Much Water Are You Using?

Summer, 2004

Volume 1, Issue 1:
Water Quantity

Close your eyes. Imagine 805,000,000 plastic gallon jugs lined up in a row, filled with water. Can you even visualize something so immense? Well, believe it or not, that is the amount of water that Lynden used during the last calendar year! In fact, when compared to our City's population numbers, the per rate capita is one of the lowest that it's been in years. Surprising, isn't it?

However, that doesn't mean our community, can't do a better job to reduce our water use. Peak day usage is running at 4.3 million gallons (mg). That means that up to 4,300,000 gallons are being used in a



single day in the City! [For ideas on how to reduce your use, see pg. 3]

(including schools), and the remaining 40% was used by citizens in their residences.

What is all this water being used for? Good question! In 2003, approximately 40% of the water was used by industry, 20% was used in the business/commercial sector

Peak Day Usage

2000	3.9 million gallons
2001	4.0 million gallons
2002	4.1 million gallons
2003	4.3 million gallons

DID YOU KNOW...

50-100 gallons of water are used in the average 10 minute shower!

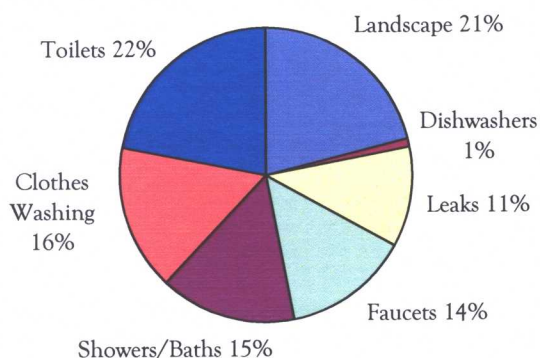
The average automatic dishwasher uses 9-12 gallons of water!

On average, 20 gallons of water are used to hand-wash the same amount of dishes!

The average person uses 2 gallons of water to brush their teeth!

Source: US EPA

Average Residential Water Use



Source: AWWA residential end-user study, 1999

Where is it Going?

So how did Lynden residences use approximately 322 million gallons last year? Although there is not a break-down for City of Lynden residential users, one can look at average residential water use distribution numbers to get a fairly accurate estimate [see Average Residential Water Use graph, left]. The answers might surprise you.

In fact, it is estimated that only about 4% of residential water goes towards drinking and cooking (combined)! The majority of water used in the home is used in the bathroom—an estimated 40-50%—for bathing, toilet flushing, hand washing, and other toiletry needs! Outdoor watering accounts for approximately 1/5 of all use, although Lynden residents, with their luscious gardens and lawns likely use a larger proportion than the average user. Amazingly, it is estimated that 11% of all residential water is wasted due to leaks.

The Nooksack River: Lynden's Drinking Water Source

In this day in age in our society, getting water for drinking, cooking, watering, and washing, is as easy as turning on a faucet. But have you ever stopped to think about where that water originally comes from? In fact, the City gets all of its drinking water—all of the water that is used in Lynden's homes, schools, and businesses—from the nearby Nooksack River.

Water is withdrawn near the Hannegan Bridge and pumped to the City's Water Treatment Plant, where it is treated, filtered, disinfected, and fluoridated, before it gets piped throughout the Lynden community for potable use. The water is routinely monitored for bacteria and chemical contaminants. In 2004—as in previous years—the water met all federal and state requirements.

The City continues to upgrade its water system. As you may have seen, construction on the City's new 6 million gallon reservoir has already begun. As well, the City is beginning construction on upgrading the river intake structure and upgrading the City's existing 3 million gallon reservoir.



The City's water intake near the Hannegan Rd. Bridge.

Competing Uses...A True Balancing Act

Although it may appear vast, there is a finite quantity of water available in the world. As our population continues to grow, so too do our City's requirements for water. Many others—farmers, aquatic species, communities, etc.—also rely upon water for not only their livelihood, but for their basic survival, as well. Thus, we are left to balance a limited resource among often-times competing users. Although many people don't realize it, the Pacific Northwest, "the rain capital of the United States" does, in fact, have water scarcity issues—Whatcom County included.

The struggle to balance many users' needs is often hardest in the summer months, when our rainfall is at it's lowest and our usage is peaking (see figure, below).

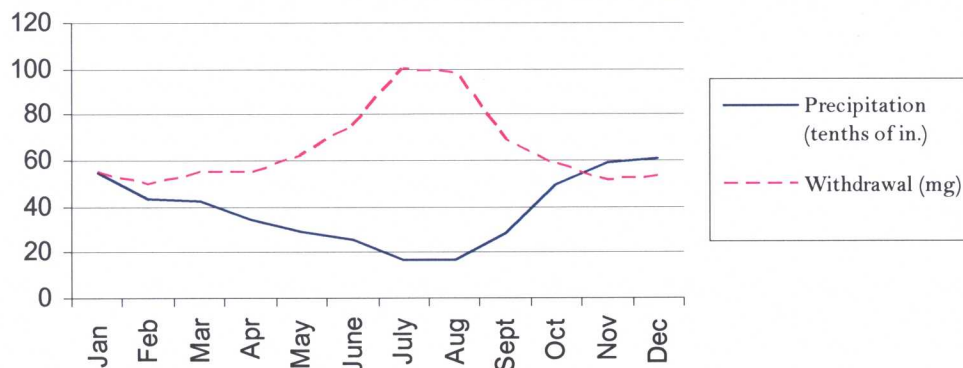
All the water that will ever be is, right now.

~ National Geographic, October 1993

As our community—both in Lynden and beyond—continues to grow, it becomes more and more important to 'live within our means,' as best we can.

Though we often take the use of clean and abundant water for granted, we shouldn't—and soon likely won't be able to. In recent years, water has become known as 'blue gold.' This nickname reflects just how valuable and precious water is becoming...even in the Puget Sound. Finding a balance between in-stream and out-of-stream users is a challenge for us all to consider. How can you be part of the solution? One part of the answer is by reducing your use. For ideas on how you can reduce your use, see pg. 3.

Average Monthly Precipitation vs. Average Monthly Nooksack Withdrawals



Left: Comparison of average monthly precipitation (tenths of inches, Clearbrook station, 1931-2004) to average monthly City of Lynden water withdrawals from the Nooksack River (million gallons, 1996-2003, Western Regional Climate Center).



Reducing Your Use: Ideas on Residential Conservation

Conservation is a concept that we hear repeated again and again. Why? **Because it works!** Reducing your use is inexpensive (in fact, it will ultimately save you money), is quick and easy to accomplish, and benefits everyone. With greater and greater competing uses looking to utilize a finite natural resource, conservation just makes sense. This summer, with snow packs having melted ~1 month earlier than normal, we have had lower-than-normal flows in the Nooksack and its tributaries, which makes conservation all the more important.

Using Low-Flow Fixtures and Appliances

Do you have an older home? If so, you may have older fixtures and appliances which use significantly more water than newer low-flow versions. Don't want to spend a lot of money? Basic conservation fixtures, such as aerators for your faucets or showerheads, can be purchased at your local home improvement/hardware store for less than \$1, and there are a variety of low flow showerheads for less than \$15. The costs of these devices often makes up for themselves (in the costs of water saved) in a matter of weeks or months.

Gallons Per Use

Toilets

Conventional: 3.5–7.0

Low Flow*: 1.6

Washing Machines

Conventional: 37.0

Low Flow: 17.5–26.0

Faucets

Conventional: 3.0

Low Flow*: 2.5

Showerheads

Conventional: 5.0

Low Flow*: 2.5

* Required for all new construction and remodeling per the 2000 Uniform Plumbing Code



Are your fixtures leaking?

This could be costing you a bundle...not to mention wasting a significant amount of water!

Amount of waste per month
at 60 pounds per square inch water pressure

To determine if your toilet tank is leaking, drop a few drops of water-based food coloring in the toilet tank and wait. After 5 minutes, if there is coloring in the bowl, your tank is leaking and needs fixing!

Diameter of stream	Gallons
1/4 "	393,833
3/16"	222,000
1/8"	98,667
1/16"	24,667

**When the well is dry, we
know the worth of water.**
- Benjamin Franklin



How to Have a More Water Efficient Landscape

In the summertime, when outdoor watering significantly increases, accounting for an estimated 40-50% of all residential use, household water use can double! Here are some ways that you can reduce your outdoor use:

- ◆ Use compost. Spreading 2 - 4" of compost around your garden can prevent up to 73% of evaporation loss.
- ◆ Use a rain barrel. Collect precipitation from the downspouts of your home in a purchased or home-made rain barrel and use this water to water your plants and gardens.
- ◆ Waiting for your shower to warm up? Collect the unused water for landscape watering. As well, you can use the water you boil pasta or veggies in for outdoor watering.
- ◆ Water between 5–10 am or 5–10 pm, when evaporation rates will be lower (and, it's the law: Lynden Code)
- ◆ Don't water your lawn or garden on windy (or rainy!) days. Turn off your automatic sprinklers if need be.
- ◆ Replace part or all of your lawn with lower-water use plants and vegetation.
- ◆ Clean your driveway, sidewalk, and patio with a broom, rather than with a hose. This can save 10 gallons of water per minute.
- ◆ Wash your car on your lawn using a hose with a spray (shut-off) nozzle. This will both save water and allow excess wash water to water your lawn.

(cont. on pg. 4)

The City of Lynden Public Works Department produced this newsletter with funding from the Public Involvement and Education Project, financed by proceeds from Washington State Water Quality Account, and administered by the Puget Sound Action Team.



Questions???
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City of Lynden Public Works Dept.

If there is magic on the
planet, it is contained in
the water.
Loren Easley

Reduce Your Use..., (cont. from pg. 3)



Lawn Watering

We all know that those summer water bills can get expensive due to outdoor watering, but did you know that it is estimated that the typical suburban lawn consumes 10,000 gallons of water above rainwater each year? Some thoughts to consider:

- ◆ Most people over-water their lawns.
- ◆ In the summertime your lawn needs only about 1" of water (including rain) a week.
- ◆ Generally, this is best accomplished by a semi-heavy watering 1-2 times per week (as opposed to every other day).



more water. Surprisingly, households with drip irrigation systems used 16% more water than households without these systems. This suggests that homes with in-ground and drip irrigation systems need to use them correctly in order to be more water efficient.

How Efficiently Are You Watering?

According to an American Water Works Association study, manual watering with a hand-held hose is the most water-efficient method of watering, typically resulting in 33% less water used outdoors than the average household. On the other end of the use spectrum, in-ground sprinkler systems



Are You Watering Enough?

Want to make sure your lawn is getting enough water? Spread out a few empty tuna or soup cans in your lawn while you're watering. When you're finished watering, average the amount of water in the cans. When the amount in the cans reaches 1" (including any rain you've had that week), you're done watering for the week.

Water Rights & Instream Flows



How Water Rights Work

All ponds, lakes, streams, rivers, and groundwater are considered waters of the State. As such, Washington State law requires all diverters of surface water, all users of 5,000 gallons or more of groundwater per day, and all users irrigating more than 1/2 acre with groundwater to apply for a water permit. The Washington State Department of Ecology must review and approve the permit before use is allowed.

All water use is subject to the 'first in time, first in right' rule. This means the oldest (most senior) rights get fulfilled first. A younger (junior) user can then only withdraw water if it does not affect any and all more senior users. Seniority is established by the date the application was filed for a water right (or, the date that water was first put to

beneficial use in the case of claims and exempt ground-water withdrawals).

In recent years, as applicants have increased and greater and greater proportions of the water are allocated, approval of the applications for permits have become less certain in many watersheds, including the Nooksack watershed. Thus, continuing to withdraw greater and greater quantities of water from the Nooksack—beyond what the State has already approved for our city—is not necessarily a viable solution.

What Instream Flows Are

In 1986, the Department of Ecology recognized that it was important to protect water levels in streams in order to afford aquatic species, such as salmon, an aquatic environment that they could live and reproduce in, as well as to maintain waters for esthetic purposes and recreational uses. As

such, Ecology set instream flow requirements (a minimum flow level for a given stream at a given time of the year) in the Nooksack Basin. This was similar to issuing water rights for and to many of the local streams and rivers to maintain a given amount of water.

The 1986 flows are still in effect today, and are currently being studied for potential modification through the Water Resource Inventory Area 1 process (wria1project.wsu.edu). Where it is clear that sufficient water does not exist to satisfy the set flows, Ecology has closed the water bodies to further water right appropriations.



For more information on water rights and instream flows, visit Ecology's website at www.ecy.wa.gov



Community Education of Community Waters: Stormwater in Lynden

Part 2 of a 4-part series on water,
as it pertains to the Lynden community

What is Stormwater?

Stormwater is precipitation that washes pollutants and other contaminants over the land to stormdrains and/or into waterways. It is most often created when rain-water (or melted snow or ice) flows over impervious surfaces. In non-urbanized areas, when it rains or snows, the majority of water seeps into the ground. However, in urbanized areas, where there are many impervious surfaces—such as paved streets, sidewalks, and driveways—the water collects on the impervious surface and is un-

able to infiltrate into the ground.

Although rain, itself, is normally pretty clean, stormwater is not. As stormwater runs over impervious surfaces [either into a storm drain (see picture, below) or onto a pervious

surface] it tends to collect whatever substances are on the surface, including oil, dirt, debris, fertilizer, and pesticides. Although there may only be small amounts of these substances, added up, this can create some very polluted water.



Fall 2004

Volume 1, Issue 2:
Stormwater

DID YOU KNOW???

The most recent National Water Quality Inventory reports that runoff from urbanized areas is the leading source of water quality impairments to surveyed estuaries, and is the third-largest source of impairments to surveyed lakes.

—U.S. Environmental
Protection Agency



But Don't Storm Drains Clean the Water?

In short, in most cases, the answer is

“No.” Lynden's older storm drain system is primarily designed to collect and remove the water from

impervious surfaces, in order to reduce flooding in streets, parking lots, sidewalks, etc., rather than clean the water.

Although some select drains in certain high-impact locations—such as gas stations—do have filters to remove oil, and some newer subdivisions and other

sites have special detention facilities or infiltration systems, **many of the storm drains in Lynden drain directly to our local surface water bodies, including Fishtap Creek and the Nooksack River.**

That means that any substance that the stormwater encounters en-route to the storm drain, including leaked vehicle oil, sediment, and household and pet wastes, gets drained directly into our local waterways, along with the stormwater.

[For more information on the effects of stormwater pollution, turn to page 2.]



The Effects of Stormwater Pollution

Since much of Lynden's storm system drains directly to our local surface waters, allowing oil, paint, debris, or any other substance to enter into the storm drain system is like pouring these substances directly into Fishtrap Creek or the Nooksack River. These substances can be

extremely harmful to our local waters, as well as to the people, plants, and animals that use them. The following is a list of some common pollutants found in stormwater and their impacts on water quality:

◆ **Sediment** (sand, soil, or other small particulate matter): This can give water a cloudy appearance, making it difficult to treat for drinking-water uses. As well, sediment can ruin salmon habitat and limit aquatic plant growth.

◆ **Debris** (trash): In addition to clogging storm drains, debris can harm aquatic animals and make areas unsuitable for human recreation.

◆ **Nutrients** (plant and yard debris, food waste): These things decompose in the water and reduce the

water's oxygen levels. Salmon and other aquatic species are unable to survive in waters with low oxygen levels.

◆ **Oils & Greases** (from vehicles or food preparation): Even at low concentrations, oil and grease can be toxic to salmon and other aquatic species.

◆ **Pesticides & Herbicides**: These substances can also reduce oxygen levels in water and can be toxic to salmon and other aquatic species. As well, pesticides and herbicides can cause human health concerns, making water unsuitable to drink and/or use for recreational purposes.

◆ **Fecal Coliform Bacteria**: This bacteria indicates the presence of human and/or animal fecal waste, which can limit recreational use, drinking water use, and shellfish harvesting areas.

◆ **Other Household Hazardous Wastes** (paint, solvents, other vehicle fluids): These substances can be toxic to salmon and other aquatic species, and can cause human health concerns.

Recycling the motor oil from one oil change (5 quarts of oil) protects 1 million gallons of drinking water (a year's supply for 50 people) from surface water pollution by improper disposal.

—American Petroleum Institute, 2002



DISPOSE OF USED MOTOR OIL PROPERLY. ONE QUART OF MOTOR OIL CAN CONTAMINATE MORE THAN 250,000 GALLONS OF WATER.

—AMERICAN WATER WORKS ASSOCIATION (AWWA) WEBSITE



Sediment by weight is the largest single pollutant in the United States. Sediment reduces

the productivity of aquatic plant and animal communities. It can threaten the survival of fish by covering essential spawning grounds, covering eggs, and preventing emergence of recently hatched fish. Sedimentation is a major cause of the decreased quality of fisheries throughout the United States.

—USDA, Chesapeake Bay Riparian Handbook

Keeping it Clean: How the City is Reducing Stormwater Pollution in Lynden

Water quality is an important issue for the City of Lynden. Not only does the quality of our local waterways affect basic things like our drinking water, but it also affects other important facets of life, such as recreation (fishing, boating, swimming), aesthetics, and fish and shellfish habitat. Here are just a few of the things that the City is doing to reduce stormwater pollution and promote good water quality in our local waterways:

◆ **Clean storm drain basins.** Approximately two years ago, the City implemented an on-going program to clean out City drain basins. Basins with reported problems, as well as basins that have a history of problems, are cleaned out on a more frequent basis, though all drains are continually maintained.

◆ **Street sweeping.** Throughout the year—though most aggressively during fall and winter months—City streets are swept using a professional street sweeping vehicle. The sweeping helps pick up debris, sediment, and other matter that could otherwise clog storm drains and/or be routed into our local waters.

◆ **Require Best Management Practices for new construction and remodeling.** The City has adopted the Washington State Department of Ecology's most recent (2001) Western Washington Stormwater Management Manual, which provides a set of standards to control the quality and quantity of stormwater runoff in new construction and remodeling in order to maintain water quality and protect the beneficial uses of local waterways.

◆ **Respond to complaints of pollution.** When the City receives complaints such as oil spills in roadways or large debris in the Creek, Staff respond as quickly as possible, and in most instances are able to rectify the problem.

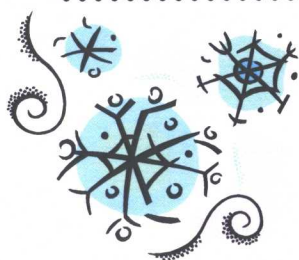
◆ **Work with WA. State Dept. of Ecology.** The City of Lynden and the Washington State DOE work together to reduce and remedy water quality problems.

◆ **Reduce herbicide use.** The City Public Works Department uses herbicide as infrequently as possible. Where possible (including along such sensitive areas as large street-side ditches, such as Double Ditch) the City will mow and weed-eat, rather than apply herbicide. When herbicide is applied, it is done by a State Certified herbicide sprayer, whom has been appropriately trained so as to minimize over-spray and run-off. The City uses Roundup Ultra, with the active ingredient, glyphosate, which readily dissipates from soil and water.

◆ **Reduce the use of paint on City streets.** Streets are often painted to demarkate such things as cross-walks, lanes, and storm drains. However, over time, the paint can wear and leach into the storm drain system, and eventually into our waterways. Lynden now uses such products as road buttons (also known as 'turtles') between street lanes, thermoplastic reflective pavement markings to highlight crosswalks, and plastic stormdrain markers (that remind citizens that storm drains drain to local waterways), in place of paint.



Reducing Wintertime Pollutant Inputs



Wintertime in north Whatcom County can be pretty icy. How-

ever, the use of traditional salt, sand, and deicers can potentially create water quality problems for salmon and other aquatic species as these substances make their ways from our roads, sidewalks, and driveways into our local waterways.

Other, less harmful and less well-known alternatives do exist, however. According to *Organic Gardening* magazine (as reported by the 'Whatcom Watershed Pledge,' Winter 2003), alfalfa meal makes an excellent alternative to salt and chemical de-icers. The nitrogen in alfalfa meal promotes melting, while its granular texture provides traction. After the snow/ice has melted, the meal can be swept onto lawns and gardens and used as a natural soil

fertilizer. Alfalfa meal can be found at local feed stores for ~\$12 for a 20 lb. bag.



How the City Reduces Its Inputs

Due to public safety concerns, there are times when the City utilizes deicers on its roads. The City uses Cryo-
(cont. on page 4)

The City of Lynden Public Works Department produced this newsletter with funding from the Public Involvement and Education Fund, financed by proceeds from Washington State Water Quality Account, and administered by the Puget Sound Action Team.



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Developed and written by Kasey
Ignac, City of Lynden Public
Works Dept.

Reducing Wintertime Pollutant Inputs: How the City Reduces Its Inputs

(cont. from page 3)



tech CMA® Deicer, which the City selected for use due to its minimal health and environmental concerns and its successful record of use by the State. According to the product's Material Safety Data Sheet, CMA® "is not expected to be toxic to aquatic organisms."

On occasion, the City also uses sand and salt on the roads for safety purposes. In order to protect water quality, once the safety precautions are no longer necessary, the City uses a professional grade street sweeper to remove the matter. The City works hard to protect both public safety and our local waterways.

It's Against the Law...

According to Washington State Law it is illegal to pollute state waters. The State Water Pollution Control Act (RCW 90.48) makes it a violation of state law to pollute the state's surface and/or ground waters.

The Washington State Department of Ecology has the authority to issue formal enforcement actions for violations of RCW 90.48, which can include penalties of up to \$10,000 per day per violation.

To report a water quality violation contact the WA DOE by phone at 738-6250 or (425) 649-7000, or on the web at http://www.ecy.wa.gov/programs/spills/forms/nerts_online/environmental_complaints.htm



Although most people wouldn't think of dumping their used motor oil or a pail of soap into the creek, if you're allowing your car to leak oil or your car wash-water to flow onto a paved surface (and, therefore, likely into a storm drain), you may, inadvertently, be doing just that. Following are some simple steps you can take to keep our stormwater, and thus our local creeks and rivers, clean:

- ◆ Never dump anything down a storm drain.

Are You Accidentally Polluting?

- ◆ Use fertilizers, pesticides, and herbicides as sparingly as possible, especially if you live along a ditch, creek, or other waterway.
- ◆ If your car (trailer, boat, etc.) is leaking fluids, get it repaired as quickly as possible.
- ◆ Pick up your pet's waste. If you walk your dog, make sure to bring a plastic bag or use a Mutt Mitt to pick up your pet's 'deposits.'
- ◆ Do not leave lawn clippings, leaves, or other yard debris on the street where they can clog storm drains and reduce oxygen levels in waters, thus harming salmon and other aquatic life.
- ◆ Consider using pervious surfaces such as bricks, pervious pavement, and gravel around your home instead of impervious pavements.
- ◆ Wash your car at a commercial car wash that treats and/or recycles its wastewater, or wash your car on your lawn or other permeable surface using a mild dishwashing soap.
- ◆ When painting, wash the excess paint from the brush down a toilet or sink drain, rather than down a storm drain.
- ◆ Sweep up soil, trash, and other debris from your driveway and sidewalk, rather than spraying it off with a hose.

Community Education of Community Waters: Water Quality in Lynden

Spring 2005

**Part 4 of a 4-part series on water,
as it pertains to the Lynden community**

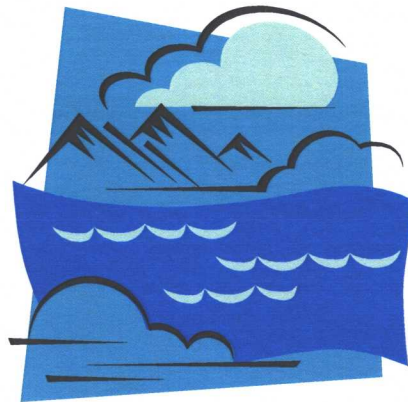
**Volume 1, Issue 4:
Water Quality**

The Quality of Our Waters

The City of Lynden is located amidst a river (the Nooksack), a creek (Fishtrap), and four street-side ditches (Double Ditch, Benson, Depot, and Bender). As such, water has become an integral part of the local community. It is used to fish, boat, and swim in. It is used to support salmon, shellfish, and other aquatic species. It is used for its aesthetic properties, such as taking walks along it and building homes with a view of it. And certainly, it is used as the source of the City's drinking water.

The ability to utilize local waters for these many purposes is not assured, however. It is dependent on maintaining the quality of these waters.

The City has worked hard to maintain a balance between population growth and water quality. Nevertheless, the quality of our local water-



ways could be improved. In the Nooksack watershed, for instance, more than 1,200 surface water bodies (lakes, ponds, river/creek/ditch segments) are currently listed as

“polluted” (WA. St. Dept. of Ecology). [For more information on the quality of local waterways, turn to page 2.]

Each person has the opportunity to impact — both negatively and positively — our local waters several times each day. Basic activities, such as whether or not you pick up your pet's waste, when and how often you fertilize your lawn, if you use pesticides or herbicides, where you wash your car, and how quickly you fix your oil-leaking car all make a difference. As the adage so accurately asserts, our water is in our hands. [For ideas on how you can make a positive difference on water quality, turn to page 3.]

The State's Assessment of Local Waters

In Washington, all surface and ground waters are considered waters of the state. The Washington State Department of Ecology (DOE) is in charge of managing the State's water resources, including the quality of the water. Every two years, per federal requirements set forth in the Clean Water Act, the DOE develops a list of all polluted waters in Washington. This list is entitled, “Washington State's Water Quality Assessment,” and is often referred to as the “303(d)” list, named after Section 303(d) of the Clean Water Act, where the listing requirements are set forth.

To develop the Water Quality Assessment, the DOE compiles its water quality data and solicits data from

other agencies and groups (e.g. local municipalities, tribes, etc.). After assessing the data, the DOE compiles a list of waters that they consider to be impaired by pollution. The public is then provided an opportunity to comment on the list, after which the list is submitted to the Environmental Protection Agency for approval.

The purpose of the assessment is to help the state focus its resources on the waters that are most in need of

(cont. on page 2)



The State's Assessment of Local Waters, cont. from pg.1

remediation. For all water bodies that are listed, cleanup plans are subsequently developed and implemented. The goal of each of the plans is to reduce or eliminate the pollution and improve the quality of the water.

Currently, the DOE is reviewing public comments submitted on a draft version of the 2002/2004 Assessment. Curious about how the DOE rates the quality of our community's waters? A summary of local waters listed in the draft Assessment is included, left.

To review the full draft 2002/2004 listings or for more information on the Assessment, go to www.ecy.wa.gov/programs/wq/303d/2002/2002-index.html.

Local Waters Listed in the Draft 2002/2004 State Water Quality Assessment

WATER BODY	TIMES LISTED	CAUSES FOR LISTINGS
All waters in the Nooksack Basin	1,227	Various
Mainstem Nooksack	115	Temperature, pH, fecal coliform, low dissolved oxygen, sediment, and various others
Fishtrap Creek	63	Temperature, low instream flows, pH, fecal coliform, low dissolved oxygen, and various others
Double Ditch	22	Fecal coliform, ammonia
Benson Rd. Ditch	5	Fecal coliform, low dissolved oxygen
Depot Rd. Ditch	9	Fecal coliform, ammonia, low dissolved oxygen
Bender Rd. Ditch	9	Fecal coliform, low dissolved oxygen

Common Causes of Pollution

WATER QUALITY CONCERN	POTENTIAL CAUSE(S)
Fecal Coliform	Pet waste, agricultural/dairy runoff, improperly installed or malfunctioning septic systems
Temperature	Lack of vegetative cover, increased water surface area due to lower stream depths and/or widening stream channels
Low Dissolved Oxygen	Lack of vegetative cover, increased water surface area due to lower stream depths and/or widening stream channels, nutrient loading from urban and/or agricultural runoff
Sediment	Urban stormwater runoff, erosion due to reduced vegetative cover or alteration of shore habitat
pH	Urban stormwater runoff, agricultural runoff
Ammonia	Breakdown of decay or dead organisms, pet waste, agricultural/dairy runoff, improperly installed or malfunctioning septic systems, fertilizer runoff



Point vs. Non-Point Pollution

When determining a source (or sources) of pollution, it is necessary to determine if the source of the pollution is from a point or a non-point source. Point pollution is pollution that enters the environment from a single, identifiable source, such as a leaking oil pipe. Non-point pollution is pollution that comes from numerous sources, rather than from a single point. Examples of non-point pollution include urban runoff, which may include several pollution sources such as pesticides, herbicides, sediment, etc. Non-point pollution is the major cause of lake, river, and groundwater pollution.



How You Can Help Keep Our Waters Clean

Water quality is an important issue for our community. Water quality degradation can happen readily, and even those that are considerate of the environment can unwittingly find themselves contributing to pollution problems. Below are some hints for

IN YOUR YARD

One place where landowners can have a big impact upon water quality is in their yard.

Did you know that urban homeowners apply three times more pesticides per acre than farmers? And that 52% of lawns are over-fertilized? (Cornell Univ. Extension Services, Whatcom Watersheds Pledge)

Use pesticides, herbicides, and fertilizers only when and if necessary. Use as directed, and avoid product over-application. If your property is near a waterway, try to avoid using these products altogether.



Replace a portion of your lawn with native flowers, shrubs, and trees — especially if you live near or on a waterway. This will provide shade for waterways (helping to maintain lower water temperatures—a must for salmon and other aquatic species' survival—will increase the uptake of nutrients and other potential harmful products from stormwater runoff, and will generally require less watering.

Around the Home

Sweep, rather than hose, your walks and driveway. Spraying these surfaces not only washes debris and other pollutants into stormwater systems (which eventually drain into local waterways), it is also a large waste of water.



Where possible, (re)direct roof downspouts away from stormdrains. Allow the water to infiltrate into the ground/landscape or collect the water in a cistern or rain barrel for outdoor watering.



Unused paint, chemicals, and medicines should never be dumped down a stormdrain or a sewer drain. Each chemical product requires its own unique disposal technique. Contact the Whatcom County Disposal of Toxics at 380-4640 for information on how to safely dispose of your left-over products.



In the Car



Dispose of used motor oil properly. One quart of motor oil can contaminate more than 250,000 gallons of water (American Water Works Association).

Maintain your vehicle. Automobiles are one of the largest sources of water pollution, leaking antifreeze and oil, releasing chemicals and metals into the air and onto the ground. These products often end up in our local waters (Whatcom Watersheds Pledge).

Wash your car at a commercial car wash where the water is collected, treated, and recycled. If you do wash your car at home, use as little phosphate-free detergent as possible. Direct the runoff away from stormdrains and into a permeable surface, such as your lawn or garden.



With Your Pets



Pet waste is filled with bacteria, including potentially harmful bacteria such as fecal coliform, Giardia, and Salmonella. If the pet waste is not picked up, it decomposes over time and rainwater will eventually transport it to our stormwater system.

Although dog owners are normally the ones called upon to pick up their pet's waste, cat owners need to do their part, too! In fact, cat waste is the number one contributor of fecal matter in urban watersheds (Whatcom Watersheds Pledge).



The City of Lynden Public Works Department produced this newsletter with funding from the Public Involvement and Education Fund, financed by proceeds from Washington State Water Quality Account, and administered by the Puget Sound Action Team.



Questions???

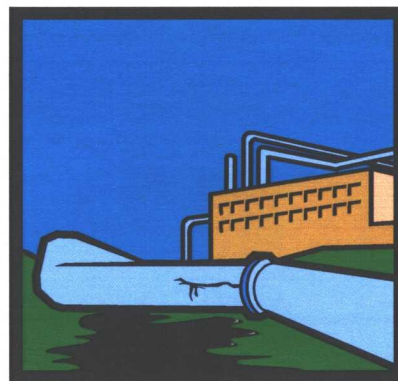
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Developed and written by
Kasey Ignac, City of Lynden
Public Works Dept.

Water Quality Violations?

Are you aware of a water quality problem or potential problem? The City encourages you to report (potential) incidences to the Washington State Department of Ecology (DOE). Information can be submitted by phone or on-line, and submissions may be provided anonymously.



By telephone:

- Oil spills should be reported to the National Response Center at 1-800-424-8802 AND to Washington State at 1-800-OILS-911
- All other spills should be reported to the DOE at (425) 649-7000

On-line:

- Reports may be filed electronically at the DOE Environmental Incident Report for Northwest Washington website at: www.ecy.wa.gov/programs/spills/forms/nerts_online/NWRO_nerts_online.html

*** Please take a moment and fill out the following questionnaire***

This newsletter completes a special 4-part, year-long series on water, as it pertains to the Lynden community. Last summer's newsletter discussed water quantity issues, such as water use, conservation, and instream flows; last fall's newsletter discussed stormwater issues, such as what stormwater is and its impacts upon local waterways; last winter's newsletter focused upon local salmon populations; and this newsletter upon water quality.

We welcome your feedback. Your responses will help guide future public education activities in the Lynden community. Questionnaires may be included with your water/sewer bill; dropped off at City Hall at the outside or inside bill drop box or at Public Works; or mailed to the Public Works Department (323 Front Street). Thank you for your time!

.....

1. Do you feel more knowledgeable about water quality, water quantity, stormwater, and/or salmon issues after reading these newsletters?

Yes No

2. Based on the information provided in this newsletter, do you feel that your choices/activities influence (either positively or negatively) local waterways and/or salmon populations?

Yes No

3. Based on the information presented in these newsletters, have you learned how to incorporate a new practice into your lifestyle that will reduce your negative impact upon local waterways and/or salmon populations? Yes No

4. Based on the information presented in these newsletters, what new practices will you incorporate into your lifestyle?

5. Suggestions for future educational efforts or other comments: